National Waste Minimization Partnership

American Video Glass Company
Reduces Lead in TV Glass

American Video Glass Company worked cooperatively with EPA Region 3 and Pennsylvania to successfully implement waste minimization initiatives. Through recycling and material substitution, lead content in the company's television glass manufacturing process has decreased.

About American Video Glass Company

American Video Glass Company (AV) began in 1997 as a partnership between Sony Corporation and Corning Asahi Video Products. AV produces more than 250 tons of glass funnels and glass panels per day for color television picture tubes. The facility uses two different glass tanks to produce the glass funnel and panel, since the composition of each is different. One of the raw materials used in glass production is lead, which provides shielding from the high energy radiation generated by the cathode ray tube.

AV's Accomplishments

In 1999, AV received both the National Pollution Prevention Roundtable's PBT Cup and the Pennsylvania Governor's Environmental Excellence awards for its efforts to reduce lead releases into the environment. Since implementing waste minimization initiatives, AV reduced disposal of lead wastes by more than 95 percent from 1997 to 2000, while production increased by about 20 percent. AV has decreased its lead usage by about 1,800 tons per year. Since March 1999, the facility has saved a total of over $560,000 on raw material and waste disposal costs.

AV's Waste Minimization Strategies

AV's facility was designed and constructed to minimize actual and potential releases of lead and other hazardous materials. Prior to the facility's construction, AV's management team reviewed environmental incidents at similar facilities and strived to design a facility that would prevent such incidents. AV incorporated numerous pollution prevention changes into the facility's layout, including: (1) eliminating floor drains so materials would not be accidentally released into the sewer system, (2) using gas-oxygen firing to heat the glass tanks instead of the gas and air, which reduces the nitrogen oxide emissions, (3) installing dual electrostatic precipitators per glass tank to ensure one would function while the other is shut down for cleaning, (4) using double-walled sumps, and (5) installing stainless-steel liner and high-density polyethylene liner under the plating shop to prevent chrome release.

Project Snap Shot

Achievements:

- Decreased lead waste disposal by over 95%.
- Saved over $560,000 in raw material and waste disposal costs.

Awards:

- 1999 National Pollution Prevention Roundtable's PBT Cup
- 1999 Pennsylvania Governor's Environmental Excellence Award

Site Location:

Sony Technology Center - Pittsburgh
777 Technology Drive
Mount Pleasant, PA
Westmoreland County
Television Glass Manufacturing Plant

Lead Reduction Efforts

As AV's waste minimization initiatives mature, the processes of internal reuse and source reduction are emphasized. AV's initiatives include material substitution and recycling to reduce lead release into the environment. AV has implemented the following process changes: (1) replacing lead oxide with zirconium oxide in the glass panel, (2) recycling 100 percent of the electrostatic precipitator dust collected from both the panel and funnel tanks by putting it back into the mixing and melting process, (3) recycling glass from old televisions received from Sony's post consumer recycling program.

The raw material zirconium oxide has proven to provide similar shielding protection as lead. The glass products made from the zirconium oxide have passed all of AV's customer tests and requirements and received the Underwriter's Laboratory product approval.

These process changes significantly reduced AV's consumption and release of lead-containing material while the quality of the glass manufactured from the electrostatic precipitator dust has been maintained.

Ongoing Waste Minimization Efforts

In April 2000, AV started recycling its chrome and caustic plating solutions used in the mold shop. To date, this recycling program has reduced the amount of "spent" plating solutions that require treatment and the amount of chrome flake and caustic bead that AV needs to purchase. AV is also recycling the process water used in its Abrasive Processing Center. This water recycling program conserves a natural resource and yields significant savings for the company.

Other activities that AV is investigating are: (1) methods to minimize the amount of waste batch material generated and shipped as hazardous waste, and (2) methods to reduce the number of hazardous waste shipments of sludge generated during the glass finishing process.

Environmental Benefits

By eliminating lead in the glass panel, AV has reduced its lead usage by about 1,800 tons per year and has cut its generation of lead-bearing wastes by about 125 tons per year. The lead content in the electrostatic precipitator dust from the panel tank was also reduced from approximately 50 percent to less than 1 percent by weight. Recycling the electrostatic precipitator dust from the panel and funnel tanks back into the process reduces the amount of lead that must be purchased.

Economic Benefits

These waste minimization initiatives not only yielded environmental benefits, but also resulted in economic benefits. By replacing lead oxide with zirconium oxide, AV increased the size of the glass panels that it can manufacture. This ability to make larger glass products has improved AV's competitive position.

AV invested approximately $90,000 to install an electrostatic precipitator dust recycling system in February 1999. In less than one year, AV saw a return on its investment that now amounts to approximately $12,000 per year.

Challenges

AV had difficulties with the quality of the cullet (broken glass) received from Sony's postconsumer recycling program. The limited cullet shipments that AV received did not meet its cullet specifications. AV has suspended purchasing cullet from the vendor and is working with them to resolve this problem.

Words of Wisdom

From AV's viewpoint, these waste minimization initiatives created a true win-win situation for both the environment and the company. AV minimized its impact on the environment by improving its processes and saved money doing it.

On the Internet:

www.epa.gov/wastemin
www.epa.gov/region3

An EPA Waste Minimization Partner

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